

AWARENESS AND PREPAREDNESS LEVEL OF LIVESTOCK

FARMERS DURING FLOOD IN ODISHA, INDIA

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ABSTRACT

The research work was conducted to study the awareness and preparedness level of livestock farmers during flood with respect to housing, feeding and general management, health care and vaccination, marketing and insurance of livestock. The data was collected through questionnaire containing both open- and close-ended questions from 120 livestock farmers selected randomly from 20 revenue villages of 4 four blocks in Jajpur district of Odisha, India. The data were collected and analyzed by suitable statistical measures like percentage and Pearson Coefficient of Correlation for arriving meaningful conclusion. The study revealed that majority of the livestock farmers (62.5%) construct shed for the livestock high above the river bed as a precautionary measure. 89.2 % of livestock farmers received feed stuff supplied by the Government agencies whereas 61.7 % respondents reported non-provision of clean drinking water for animals during flood. 59.2 % livestock farmers did not stock emergency medicines and 57.5 % envisaged that they sometime get their animals vaccinated before occurrence of flood and 35.8 % respondents always, and 33.3 % sometimes provide veterinary first-aid treatment to their animals. Insurance of livestock is done by only 4.2 % dairy farmers while 82.5% do not go for insurance of their animals. The socio-personal variables like education, farming condition, communication, mass media exposure, social participation and cosmopolitaness were found having positive correlation with the level of preparedness of livestock farmers ($p < 0.01$).

KEYWORDS: Preparedness, Livestock, Flood, Insurance & Odisha

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INTRODUCTION

India is prone to disasters due to natural and human induced factors like topographic features, geo-climatic conditions, environmental degradation, population growth, industrialization urbanization, flawed development practices, etc. Twenty seven of 35 States and Union Territories in the country are disaster prone and almost 58.6 % of the landmass is prone to earthquakes of moderate to very high intensity. Over 40 million hectares (12 % of total land) are prone to flood and river erosion and 5700 km of 7,516 km long coastline is prone to cyclones and tsunamis while 68 % of the cultivable area is vulnerable to drought (NDMA, 2007, 2009 and 2016; Kumar, 2010; Das and Dey, 2011).

The country has witnessed an increase in the frequency and intensity of disasters in the past resulting in widespread devastation because of its multilayered vulnerability, Floods have become a regular annual event in India, causing extensive damage to agricultural production, loss of human life, property and livestock (Sen and Chander, 2003). In India, 25 states and one Union Territory (Andaman & Nicobar) are susceptible to

floods. The most vulnerable states in India are Uttar Pradesh, Bihar, Assam, West Bengal, Gujarat, Odisha, Andhra Pradesh, Madhya Pradesh, Maharashtra, Punjab and Jammu & Kashmir. [NMDA, 2007, 2009 and 2016). The major disasters faced by Odisha are flood, cyclones, drought, heat waves, fire hazard and pollution. Over a period of century, Odisha has faced 90 numbers of major and minor disasters. Odisha has a coastal stretch of around 480 km, besides a number of perennial rivers such as Mahanadi, Baitarani, Brahmani, Birupa, Rushikulya, Budhabalanga and Subarnarekha, and their tributaries that pass through Odisha making the state prone to flood (Odisha Economic Survey, 2015).

Floods have become a regular annual event in Odisha causing extensive damage to agricultural production, loss of livestock property and human life. When livestock are affected by flood, problems such as the spoilage of food and water supply, reduced livestock production animal bites, stressful impact on public mental health, zoonoses, increased mortality of livestock and wild life, etc, occurs. In case of natural disaster like flood and cyclone the prime concern of everyone, and the principal objective of every relief measure, is to help people without paying any attention to livestock health that are equally vulnerable like humans (State Disaster Management Working Plan, 2010; Disaster Response and Management Plan, 2013). There are 14 cyclone/flood prone districts in the state, which includes six coastal districts (Balasore, Bhadrak, Ganjam, Jagatsinghpur, Kendrapada and Puri) and eight non-coastal districts (Cuttack, Dhenkanal, Gajapati, Jajpur, Keonjhar, Khurda, Mayurbhanj and Nayagarh (Mohapatra, 2012). The number of occurrence of flood were approximately 2.5 times more in Jajpur district compared to other districts of the state. The Jajpur district as a whole is vulnerable to flood and cyclone during both Kharif and Rabi season. Disasters like flood and cyclone have affected seriously to the people in the district. During 2000-2015, approximately 12.32 lakh people were affected due to flood in the district. Flood in the district has not only caused losses to property and crop but also caused heavy loss to the livestock production and productivity (Disaster Response and Management Plan, 2013). It has been documented in the Annual Report of Chief District Veterinary Officer (CDVO), Jajpur, 2016 that 673 large animals, 829 small animals and 13,000 poultry birds died due to flood during the period 2000-2015. People are somewhat prepared to manage life and their valuable assets at the time of flood like emergency; it is the livestock that are being neglected because farmers are not prepared how to manage their livestock at the time of emergency.

Floods, big or small, can have devastating effects on humans and livestock. We can take steps to reduce the harm caused by flooding and learn how to prepare for a flood, stay safe during a flood, and protect health after flood. We may not be able to stop the fury of oncoming flood, but we may be able to mitigate some of its damage by knowing what to do before, during and after the flood. Proper planning can help the livestock owners get through a flood safely in saving their animals. Having a preparedness plan at place before a flood can help avoid confusion and prevent loss and damage to livestock. Hence, an attempt was made to assess the level of preparedness of farmer to manage livestock in four important aspects of livestock management like housing, feeding, health care and vaccination, and marketing and insurance. The findings in the present study will be a step forward for landless, marginal and progressive dairy owners of India in preventing economic loss and uplifting their livelihood.

MATERIALS AND METHODS

The present study was conducted in Jajpur district of Odisha which has maximum occurrence of flood and cyclone both in terms of intensity and frequency. Both purposive and random sampling techniques were followed for selecting respondents for the study. The district and block was selected purposively where as random sampling technique was followed to select Gram Panchayats, villages and respondents. Out of ten blocks of the district, four blocks namely

Bari, Binjharpur, Dasarathpur and Jajpur were selected purposively for the study. From the list of revenue village, five revenue villages from each block were selected randomly. Thereafter, six livestock farmers were selected randomly from each village. Thus, 120 livestock farmers constituted the ultimate sampling unit for the study. On the basis of the pilot study and focussed group discussions with the livestock keepers at village level, the interview schedule was developed. Some close ended questions were also put in the schedule to get appropriate response. Before final data collection, entire schedule was pretested with 10 percent non sample respondents in the study area under each block for elimination, addition and alteration. Sufficient care was taken not to include respondents supposed to be selected for final interview. On the basis of the experience in pre-testing, appropriate changes were made in the construction of items and their sequences. The responses of the respondents were collected personally and suitable statistical measures like percentage and Pearson Coefficient of Correlation were employed for arriving meaningful conclusions.

RESULTS AND DISCUSSIONS

Housing Management

Information regarding preparedness of the respondents for livestock housing, feed and fodder management, health and vaccination, marketing and insurance was collected, analyzed and presented (Table 1) which revealed that majority of the respondents (62.5%) make cow shed for the livestock high above the river bed as a precautionary measure. 20.8 % livestock owners reported that they always shift their animals before occurrence of the flood while 40.8 % sometimes move their animals. Majority of dairy farmers (86.7 %) did not show any interest to relocate their animals to nearby cyclone shelters of Government of Odisha. Similarly, 62.5 % of the livestock farmers are not aware of making special arrangement for pregnant cows and calves before the onset flood. Disinfection of cow shed was never practised by the animal keepers (65.0 %). The livestock in the coastal belt of Odisha become panic during flood. In the affected areas, livestock owners brought their livestock to the safe cyclone shelters, while others left them untied, so that they could move to safe places of their own. Livestock have a natural "move away instinct" to flood waters and, generally seek higher ground if possible (Padhi, 2014). In the present study it was found that in a rural cow shed setting, sheltering livestock was good but leaving the animals unsheltered was sometimes preferable because flood waters that inundate a cow shed could trap animals inside, causing them to drown. Government of Odisha has constructed Cyclone Centres for sheltering of livestock in different coastal district of Odisha to safeguard the loss of livestock during flood. However, the present study revealed that majority of the respondents (86.7%) did not take their livestock to nearby cyclone shelter which is in line with the earlier findings (Kumar and Ramaiah, 1999; Adedeji *et al*, 2012; Patnaik *et al*, 2013). The district administration and the veterinarians along with their supporting staff under the Department of Animal Husbandry and Veterinary Services, Government of Odisha remain instrumental in motivating the livestock farmers to relocate their animal to cyclone shelter.

Feeding and General Management

Before occurrence of flood emergency, 49.2 % respondents make calculation for daily requirement of the feed for their animals and store sufficient amount of feed material for the flood period as per their requirement (45.0 %), while 14.2 % of the respondents store non-conventional feed stuff available in their locality. Most of the livestock farmers (89.2 %) mentioned that they received the feed stuff supplied by the Government agencies whereas 61.7 % respondents reported non-provision of clean drinking water for animals during flood (Table 1). Non-conventional feed and fodder constitute the major portion of animal diet during flood. The livestock farmers should search for available sources

of these feeds in that particular area before the flood or any natural calamity and store for future use. Some of the fodder tree leaves have high crude protein content which may be supplied along with concentrate mixture to maintain the nutrient requirement of the animal. The farmer should store the feed stuff for the feeding of livestock at least 2-3 weeks period (Baruah, 2006). In the present study, mixed responses were obtained regarding preparedness by the respondent with respect to feeding, general management, provision of clean drinking water during flood emergency. Although State Departments, NGOs, corporate houses, etc. supply clean drinking water for human beings but less attention is paid to livestock as a result there is possibility of occurrence of water borne diseases causing the economical loss to livestock owners (NDMA, 2009).

Health Care and Vaccination

The analysis of data related to preparedness of farmers for animal health care and vaccination indicated that 78.3 % respondents revealed a chance of increase in disease outbreak due to floods, and 49.2% dairy farmers keep contact number of veterinary doctors and livestock inspectors for emergency situation. The present study showed that 59.2 % livestock farmers did not stock emergency medicines and 57.5 % envisaged that they sometime get their animals vaccinated before occurrence of flood. Moreover, 35.8 % respondents always and 33.3 % sometimes provide veterinary first-aid treatment to their animals (Table 1). Incidence of occurrence of various infectious diseases leading to disease outbreak is a common feature in flood prone areas. The State Animal Husbandry department sensitize the livestock owners through print and electronic media regarding different vector and water borne animal diseases, epidemics, etc. The Government of Odisha has also devised several strategies for protection of animal resources by providing livestock disease diagnostic services at disease diagnostics laboratory through information and communication technologies (Odisha Economic Survey, 2015). However, most of the livestock owners of the flood prone areas do not vaccinate animals regularly, predisposing them to disease outbreak. This study indicated a relatively lower level of awareness of the respondents in the study area. Similarly, majority of the livestock owners do not stock emergency common medicine before the occurrence of flood. Giving first aid treatment to animal is an important step towards checking further aggravation of the disease and sometimes saving the life of the animal in case of emergency like dog and snake bite (Pyne and Samanta, 2009).

Marketing and Insurance

During crop damage due to flood, livestock act as a shock absorber was told by 71.7 % of the respondents. They also sell their non-productive animals in the event of flood and keep the productive animals with them. Value addition to the live stock product for long preservation is not practised by majority of the respondents (53.3 %). Insurance of livestock is done by only 4.2 % dairy farmers while 82.5% do not go for insurance of their animals. When asked about mortgaging the animals before flood, majority (91.7 %) replied that they do not mortgage their animals (Table 1). Marketing and insurance coverage are the two most important aspects of the livestock farming. If the animal as a whole or the product or by-products are not marketed at the right time and animals are not insured, the farmer will have to suffer severe economic loss. The Government of Odisha has introduced cattle insurance programme in thirty districts of the State in which the insurance premium has been subsidized to the tune of 50%. (Odisha Economic Survey, 2015). The standard operating procedures related to livestock insurance has been mandated at Gram Panchayat, Block and District level, and supervised by Sarpanch and Extension Officer annually in the State (Padhi, 2014). Despite a mechanism to insure livestock wealth exists in the Government of Odisha, poor response was observed regarding insurance coverage of the livestock in the

present study which corroborates the earlier findings. This study is in conjunction with the work of others who reported that a high number of farmers had no thorough and accurate knowledge about marketing and insurance (Mirza *et al*, 2003).

Relational Analysis of Selected Traits of the Respondents with Their Level of Preparedness

The results presented in the Table 2 revealed that variables like education, farming condition, communication materials, mass media exposure, social participation and cosmopoliteness have positive correlation with the level of preparedness of livestock farmers before the occurrence of flood and variables like age and occupation have negative correlation with the level of preparedness ($p < 0.01$). Agriculture and Animal husbandry play key role in the livelihood, income and employment generation in rural areas of the State of Odisha. Flood not only affects the production and productivity of farming system but also influence the socio-economic status of livestock owners (Mahoto, 2014; Pasupalak and Pasupalak, 2009). In the present study, the socio-economic attributes namely, education, income, occupation, farming condition, communication, mass media exposure, social participation, etc, were studied to ascertain the level of preparedness of the respondents which showed that the education level, communication, social participation and cosmopoliteness are significantly associated with the level of preparedness (Prasad, 2003; Kashem, 2006; Khandker, 2007; Sastry, 2010).

CONCLUSIONS

Protection of livestock in the flood prone area requires dissemination of information to livestock owners, development of emergency communications plan and creating awareness amongst the people about what to do when a flood is approaching their locality in order to save livestock. However, the farmers of the study area do not make proper planning regarding shifting of animal, stocking of feed and fodder and emergency common medicine to combat untoward situation like flood. Similarly, they neither vaccinate their animals nor opt for livestock insurance. It is concluded from the present study that education, farming condition, communication, mass media exposure, social participation and cosmopoliteness of the livestock farmers are positively associated with their level of preparedness. Hence, the Disaster Management Authority of Odisha should take note of these findings while formulating disaster preparedness plan for livestock protection.

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APPENDICES

Table 1: Preparedness of Livestock Farmers during Flood (N=120)

Sl. No.	Measure	Intensity		
		Always	Sometimes	Never
		Number%	Number%	Number%
a)	Housing Management			
1	Construction of cow shed	75(62.5)	19(15.8)	26(21.7)
2	Planning to move animal	25(20.8)	49(40.8)	46(38.4)
3	Planning for common shed	14(11.7)	54(45.0)	52(43.3)
4	Planning to take livestock to nearby cyclone shelter	3(2.5)	13(10.8)	104(86.7)
5	Special housing arrangement for the pregnant cow and calves	10(8.3)	35(29.2)	75(62.5)
6	Disinfection of the shed	7(5.8)	35(29.2)	78(65)
b)	Feeding and General Management			
1	Calculation for daily requirement of the feed for animals in case of flood emergency	59(49.2)	46(38.3)	15(12.5)
2	Storage of sufficient quantity of feed material	54(45.0)	44(36.7)	22(18.3)
3	Storage of non-conventional feed stuff available in your locality	17(14.2)	54(45)	49(40.8)
4	Special arrangement for the grazing animal like sheep and goat	-	67(55.8)	53(44.2)
5	Receive of feed stuff supplied by the Government agencies during flood	107(89.2)	8(6.7)	5(4.1)
6	Provision of clean drinking water for animal	6(5.0)	40(33.3)	74(61.7)
c)	Health care and Vaccination			
1	Keeping emergency contact number of veterinary doctors / L.I s with you	59(49.2)	41(34.2)	20(16.6)
2	Vaccination of your animals well ahead of flood	35(29.2)	69(57.5)	16(13.3)
3	Stocking of emergency common medicine for flood period	10(8.3)	39(32.5)	71(59.2)
4	First aid treatment of animals by yourself	43(35.8)	40(33.3)	37(30.9)
5	Chance of increase in disease outbreak / incidents due to the floods	94(78.3)	22(18.3)	4(3.4)
d)	Marketing and Insurance			
1	Selling of non productive animals before flood?	58(48.3)	20(16.7)	42(35.0)
2	Livestock act as a shock absorber during crop damage in case of flood.	86(71.7)	29(24.2)	5(4.1)
3	Selling of animals well ahead of flood to avoid distress sale	38(31.7)	31(25.8)	51(42.5)

Table 1: contd.,

4	Value addition to the live stock product for long preservation	2(1.7)	54(45.0)	64(53.3)
5	Insurance of livestock	5(4.2)	16(13.3)	99(82.5)
6	Mortgaging livestock to local land lords for economic security	1(0.8)	9(7.5)	110(91.7)

(The figures in parenthesis indicate percentage)

Table 2: Relational Analysis of Selected Traits of the Respondents with Their Level of Preparedness during Flood

Sl. No.	Variable	Correlation Coefficient(r)
1	Age	-0.068
2	Education	0.305**
3	Occupation	-0.054
4	Farming Condition	0.142
5	Communication	0.490**
6	Mass Media Exposure	0.575**
7	Social Participation	0.443**
8	Cosmopolitaness	0.412**

Significant at the 1% level